



## SECTION

## 14.4

## POPULATION GROWTH PATTERNS

**Reinforcement****KEY CONCEPT** Populations grow in predictable patterns.

Over time, the size of a population increases and decreases. These changes are due to four factors:

- **Immigration** is the movement of individuals into a population from another population and increases the size of a population.
- Births occur when individuals in a population reproduce and result in an increase in population size.
- **Emigration** is the movement of individuals out of a population and into another population and results in a decrease in population size.
- Deaths occur when predation, disease, or old age decrease the size of a population.

The growth of a population is a function of the environmental conditions. How fast a population grows is determined by the amount of resources available. There are two patterns of population growth:

- **Exponential growth** occurs when a population size increases dramatically over a period of time, and is generally the result of abundant resources and very low levels of predation.
- **Logistic growth** begins with a period of slow growth followed by rapid exponential growth before the population levels off at a carrying capacity. The **carrying capacity** of an environment is the maximum number of individuals of a particular species that the environment can normally and consistently support.

Population sizes are kept in check by limiting factors. A **limiting factor** is any environmental influence that directly affects a population size. **Density-dependent limiting factors** are affected by the number of individuals living in a given area. They include competition, predation, and disease. **Density-independent limiting factors** are factors that limit the growth of a population regardless of its density. These factors include unusual weather, natural disasters, and human activities.

1. What four factors influence the size of a population?

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2. What is carrying capacity? What type of population growth does it affect?

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3. What is the difference between a density-dependent limiting factor and a density-independent limiting factor?

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